FIG. 1

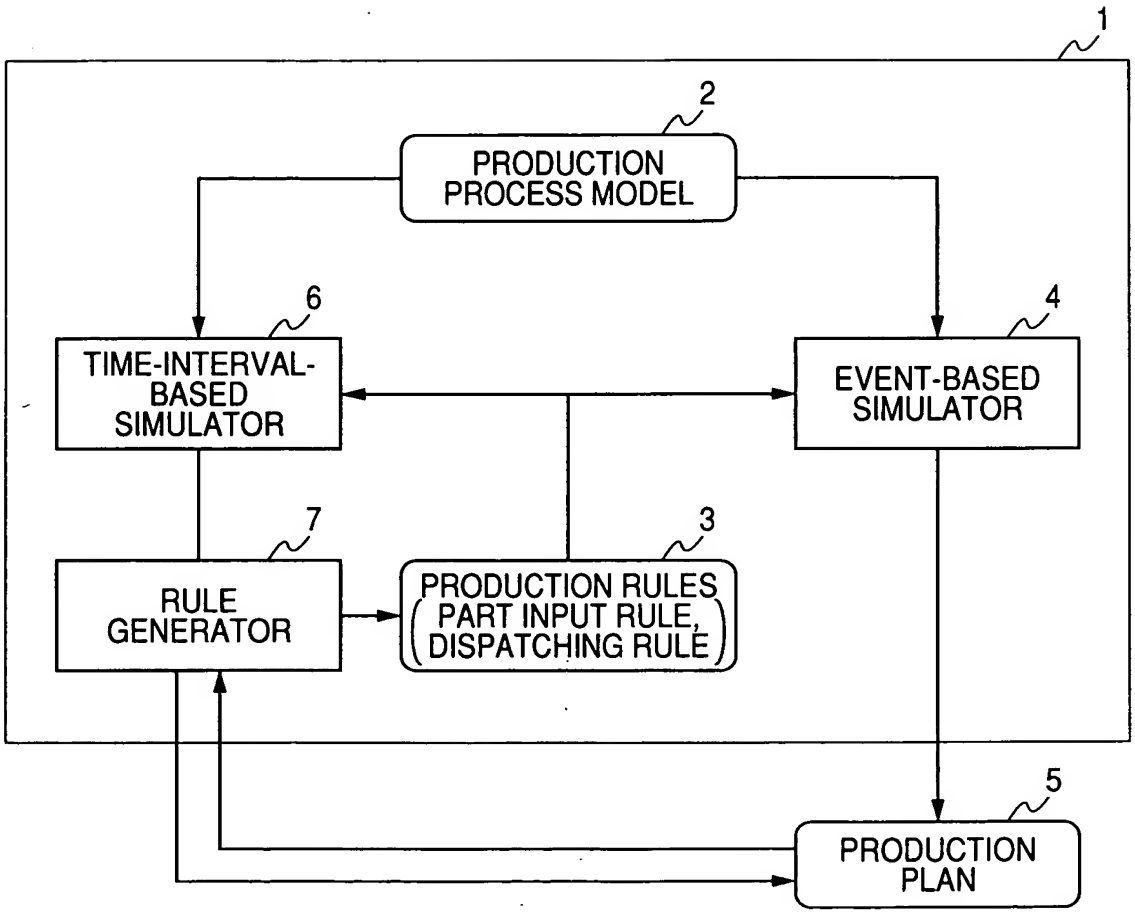
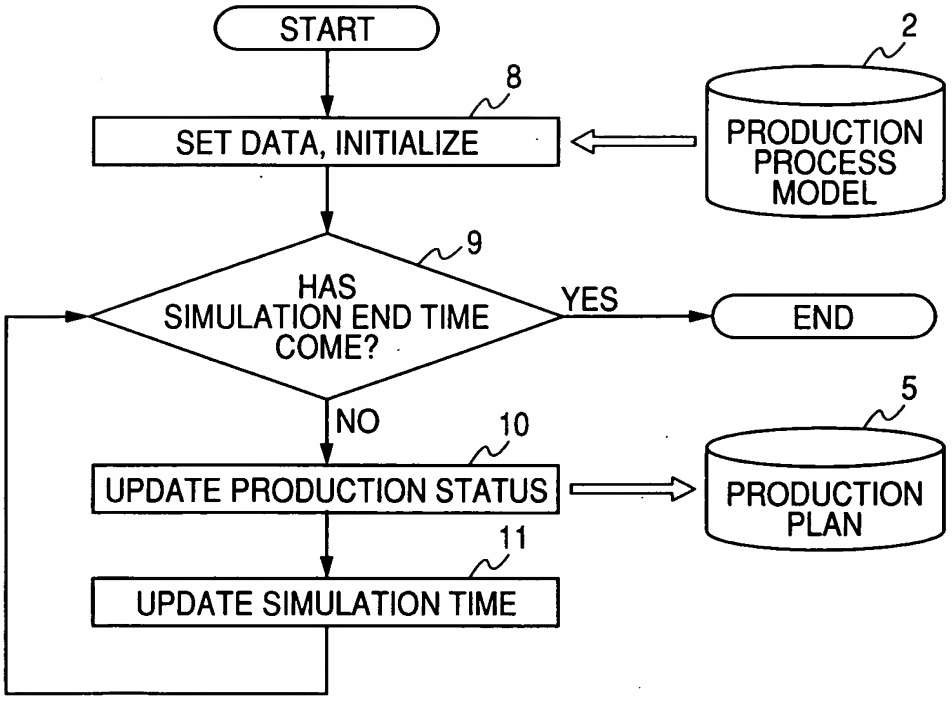

1
2
PRODUCTION PROCESS MODEL
6
TIME-INTERVAL-BASED SIMULATOR
4
EVENT-BASED SIMULATOR
7
RULE GENERATOR
3
PRODUCTION RULES (PART INPUT RULE, DISPATCHING RULE)
5
PRODUCTION PLAN

FIG. 2


START
8
SET DATA, INITIALIZE
2
PRODUCTION PROCESS MODEL
9
HAS SIMULATION END TIME COME?
YES
END
NO
10
UPDATE PRODUCTION STATUS
5
PRODUCTION PLAN
11
UPDATE SIMULATION TIME

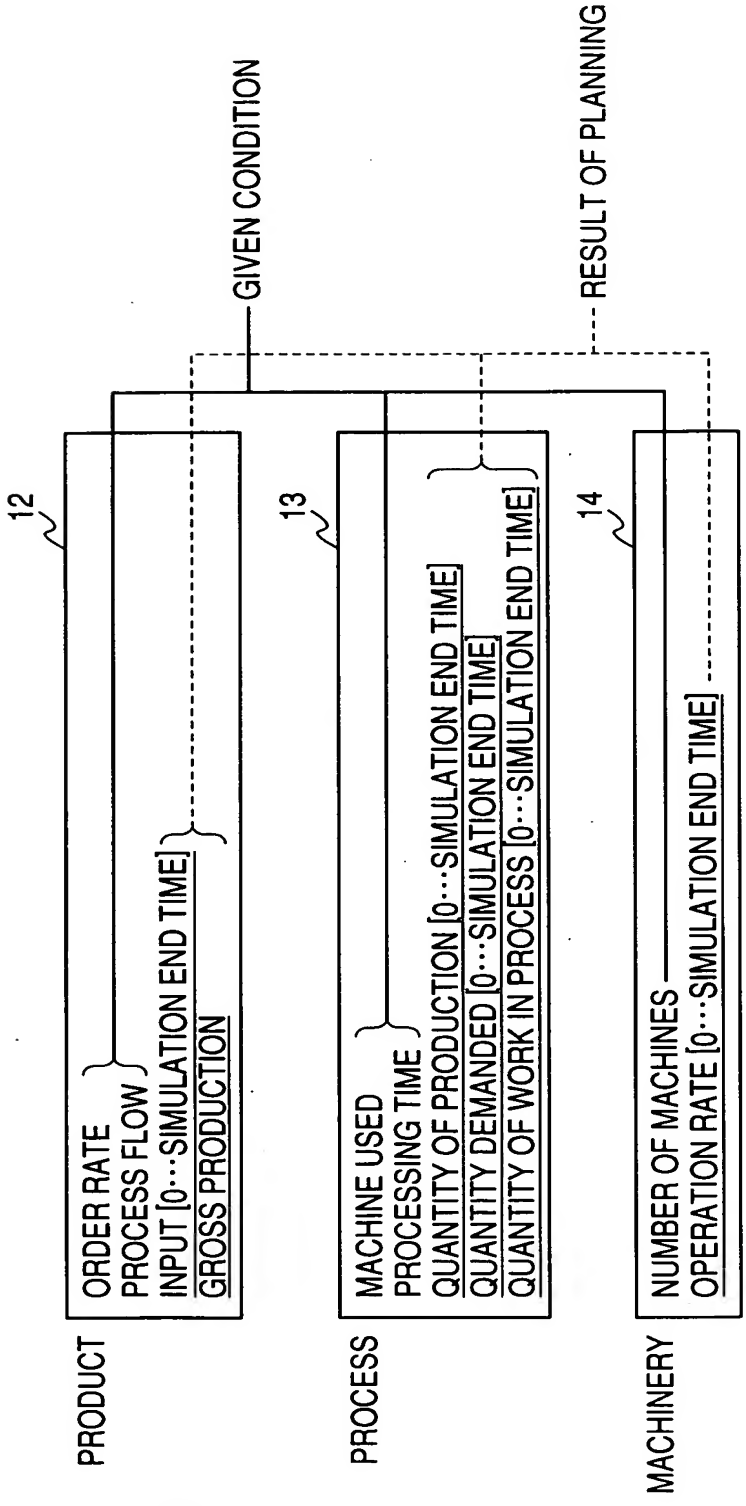

GIVEN CONDITION
RESULT OF PLANNING
12
13
14
PRODUCT
ORDER RATE
PROCESS FLOW
INPUT [0···SIMULATION END TIME]
GROSS PRODUCTION
PROCESS
MACHINE USED
PROCESSING TIME
QUANTITY OF PRODUCTION [0···SIMULATION END TIME]
QUANTITY DEMANDED [0···SIMULATION END TIME]
QUANTITY OF WORK IN PROCESS [0···SIMULATION END TIME]
MACHINERY
NUMBER OF MACHINES
OPERATION RATE [0···SIMULATION END TIME]

FIG. 3

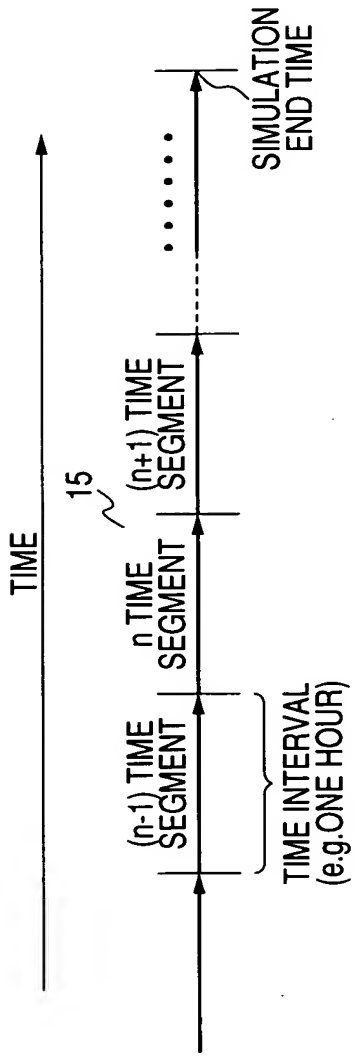

TIME
15
(n-1) TIME SEGMENT
n TIME SEGMENT
(n+1) TIME SEGMENT
SIMULATION END TIME
TIME INTERVAL (e.g.ONE HOUR)

FIG. 4

FIG. 5

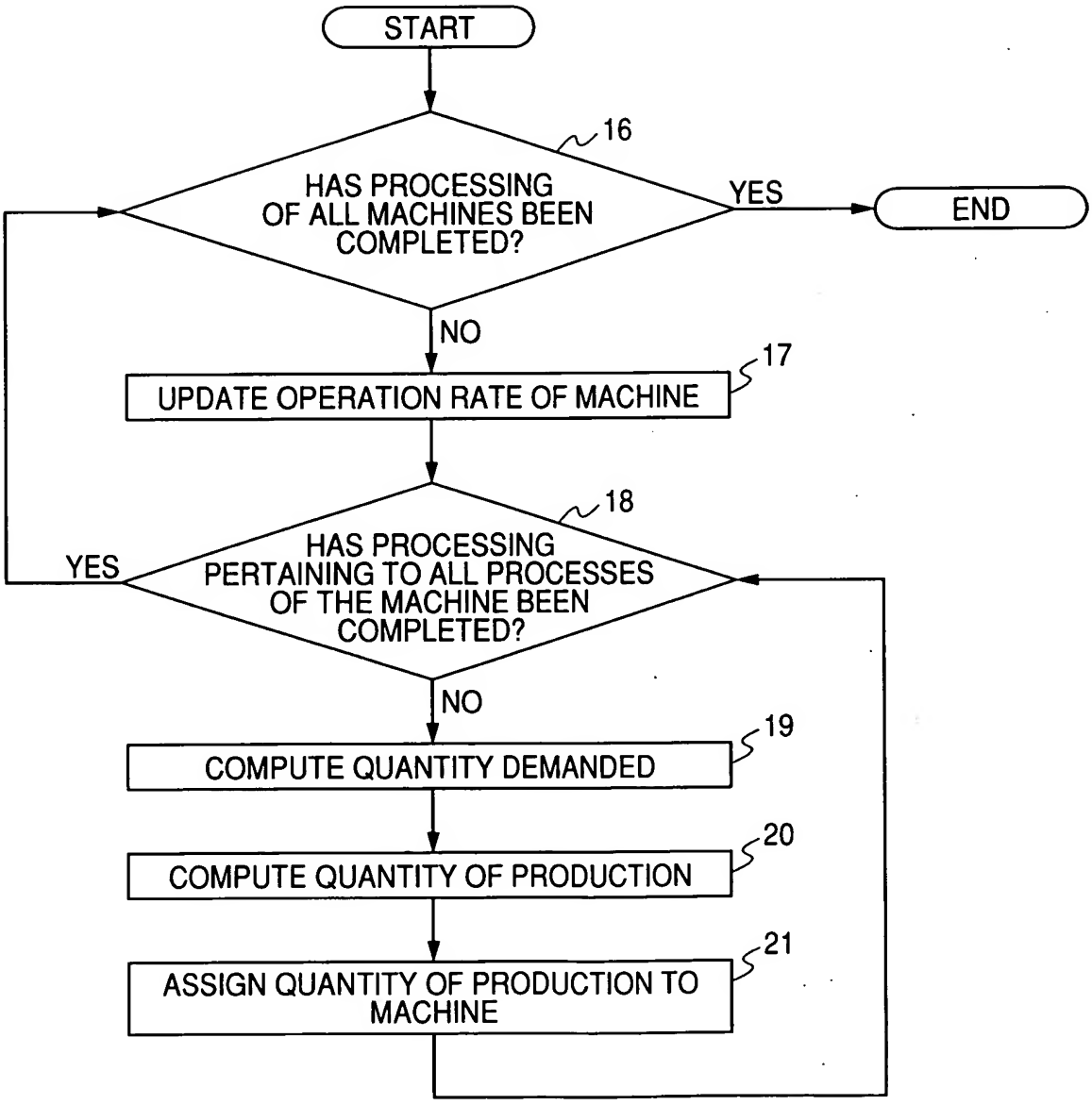
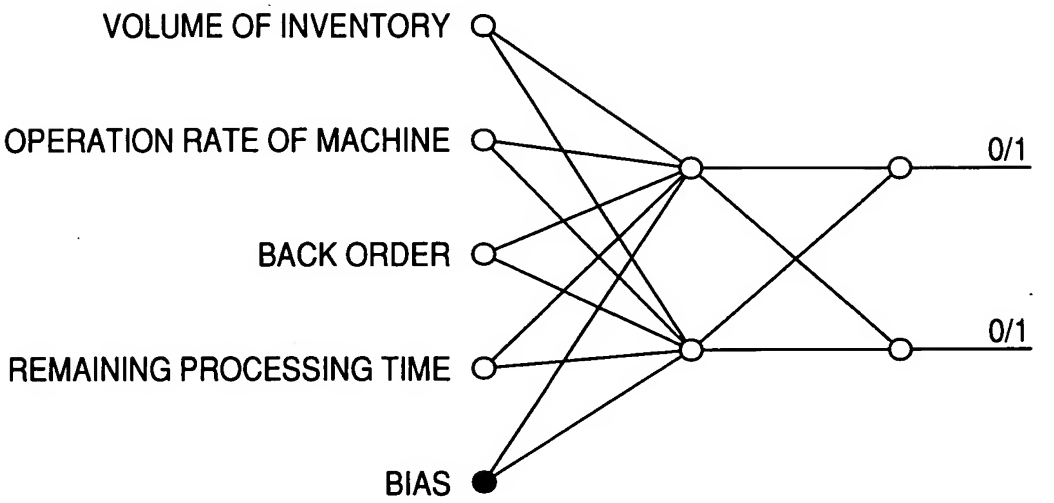

START
16
HAS PROCESSING OF ALL MACHINES BEEN COMPLETED?
YES
END
NO
17
UPDATE OPERATION RATE OF MACHINE
18
HAS PROCESSING PERTAINING TO ALL PROCESSES OF THE MACHINE BEEN COMPLETED?
YES
NO
19
COMPUTE QUANTITY DEMANDED
20
COMPUTE QUANTITY OF PRODUCTION
21
ASSIGN QUANTITY OF PRODUCTION TO MACHINE

FIG. 6




INPUT RULES

00: NO INPUT
01: INPUT AT MEAN DEMAND RATE
10: INPUT GIVEN INVENTORY
11: MEAN DEMAND RATE + INPUT GIVEN INVENTORY

FIG. 7

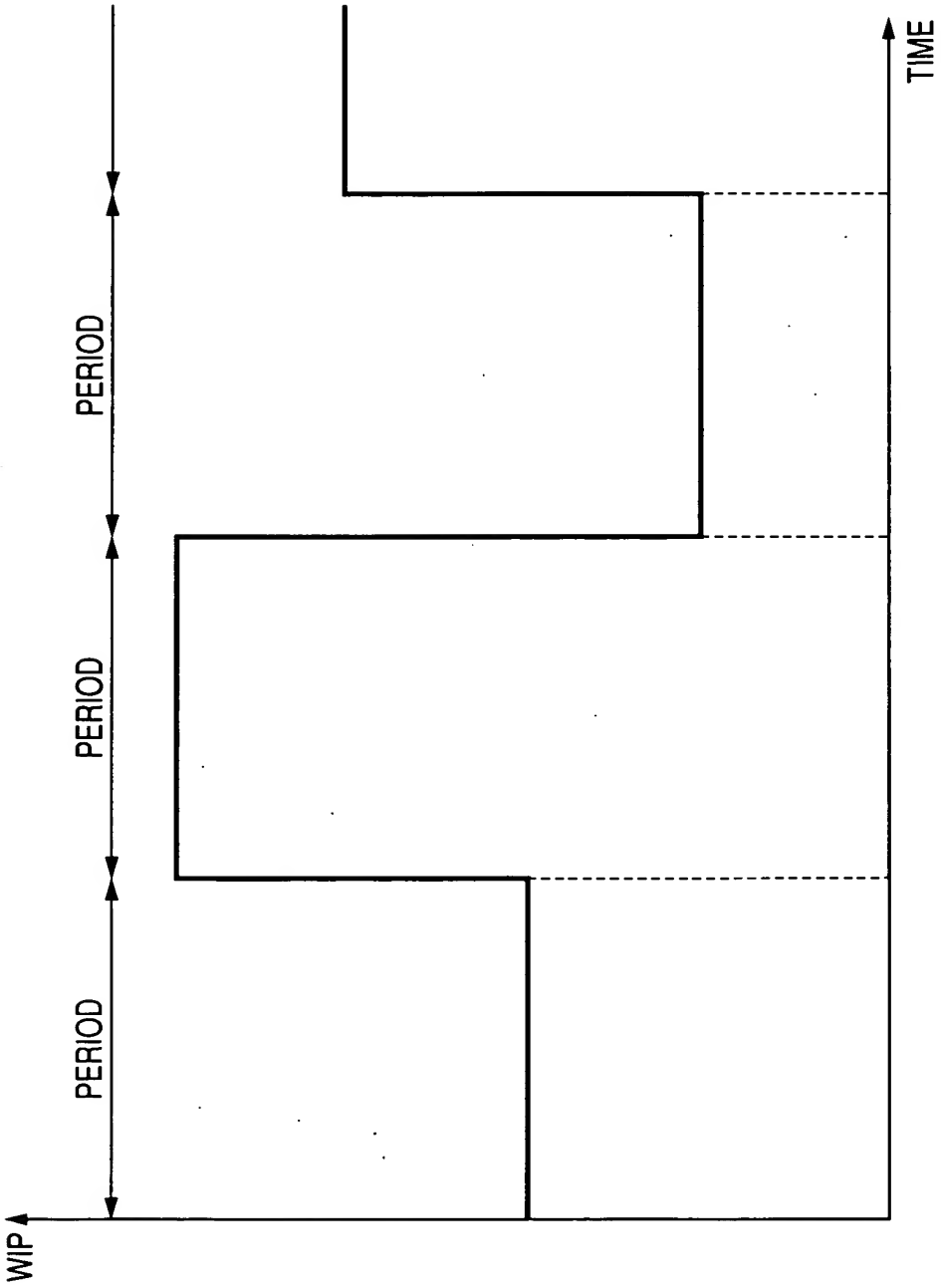


FIG. 8

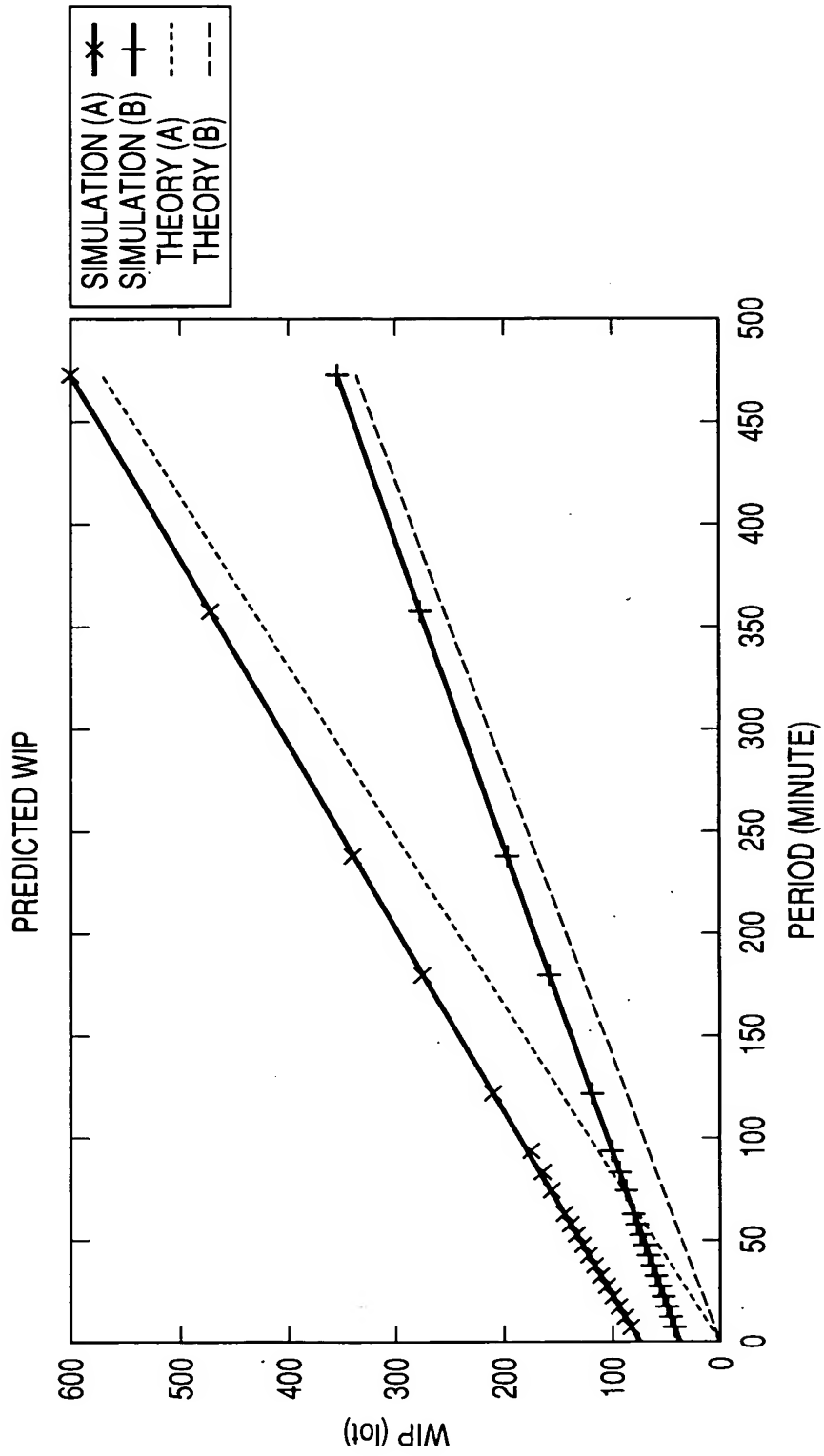

SIMULATION (A)
SIMULATION (B)
THEORY (A)
THEORY (B)
PREDICTED WIP
WIP (lot)
PERIOD (MINUTE)
0
50
100
150
200
250
300
350
400
450
500
600

FIG. 9

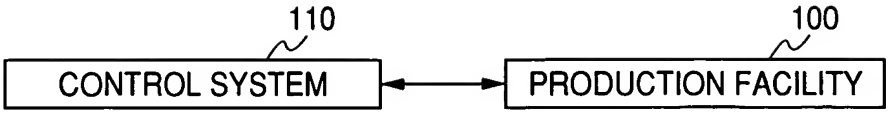
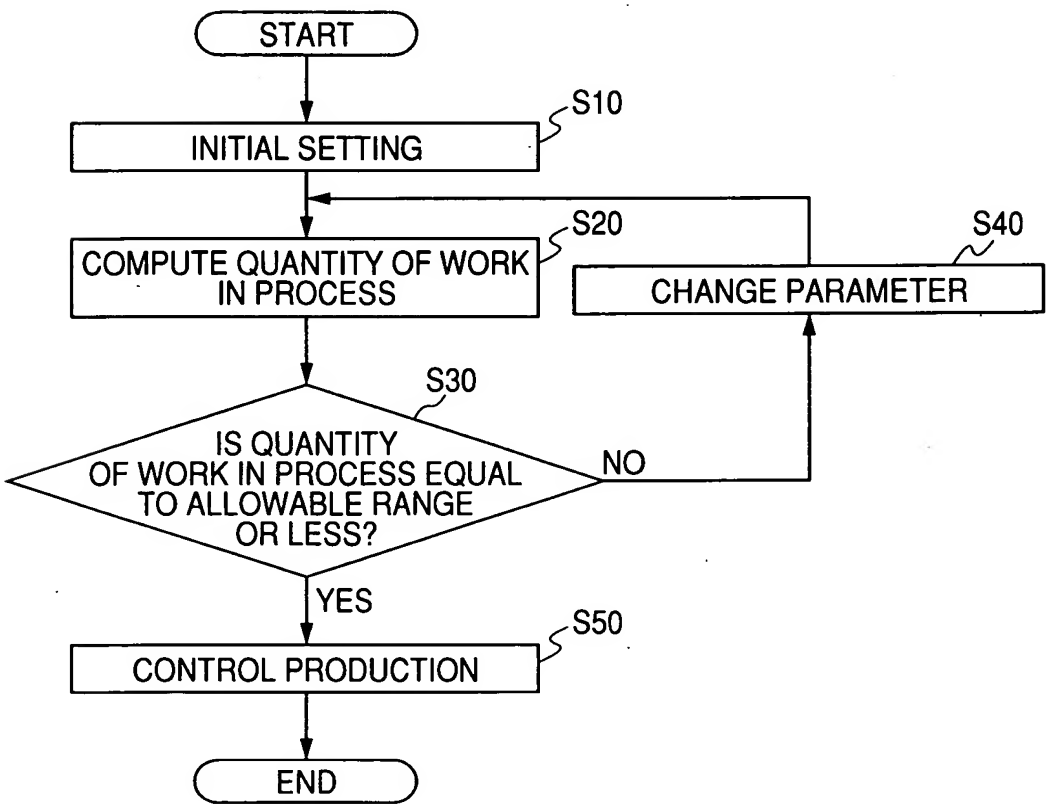

110
100
CONTROL SYSTEM
PRODUCTION FACILITY

FIG. 10


START
S10
INITIAL SETTING
S20
COMPUTE QUANTITY OF WORK IN PROCESS
S40
CHANGE PARAMETER
S30
IS QUANTITY OF WORK IN PROCESS EQUAL TO ALLOWABLE RANGE OR LESS?
NO
YES
S50
CONTROL PRODUCTION
END